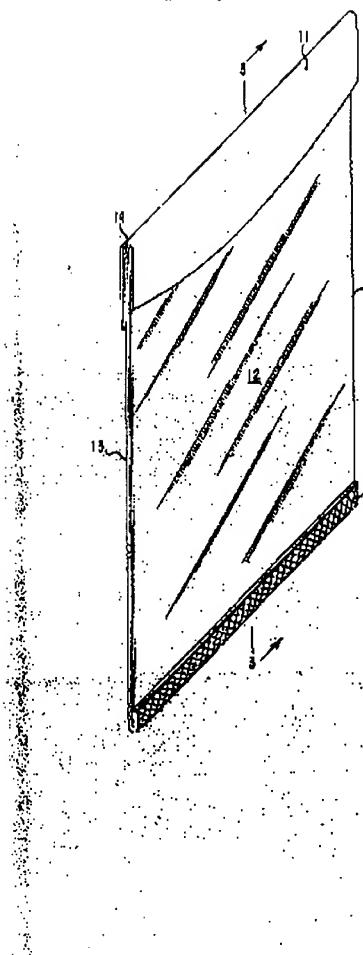
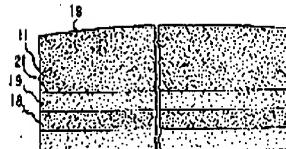
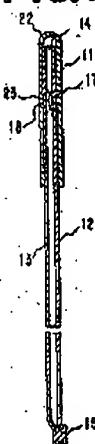


FIG. 1**FIG. 2****FIG. 3**

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This invention relates to packages and more particularly to resealable bags and sealing means permanently adhered to one side of the bag and resealably adhered to the opposite side of the bag.

In the packaging field there has been a long felt need for a resealable package, which when the package has been opened can be resealed and function as a container to hold and protect the contents from the deleterious effects of moisture, dirt, foreign particles, and the like. To date, 10 no real convenient, practical sealing means has been provided for the repeated reclosure of packages.

It is, therefore, an object of this invention to provide a resealable bag which can be made in a practical and efficient manner using standard bag making machines and standard label attaching equipment.

It is a further object of this invention to provide a resealable bag having a sealing means which is easily opened and which will not be lost once the bag is opened. These and other objects will appear hereinafter.

20 These and other important objects and advantages of the invention will become apparent as the same is more fully understood from the following description, which, taken in connection with the accompanying drawings, discloses preferred embodiments of the invention wherein:

Figure 1 is a perspective view of a bag embodying the invention.

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Figure 2 is a fragmentary plan view of a resealable label showing the areas coated with an adhesive and the area coated with a heat-sealable coating.

Figure 3 is an enlarged sectional view taken along line 3-3 of Figure 1.

Referring now to Figures 1 and 2 of the drawing, the bag generally includes a body portion 10 and a sealing device, i.e., saddle label 11.

The body portion 10 of the bag is constructed of a flexible material which is preferably transparent and has a heat-sealable surface. Such materials are preferably nitro-cellulose or polyvinylidene chloride coated regenerated cellulose films. Another film which can be used is a polyvinylidene chloride coated polyester film. The body portion includes opposite side walls 12 and 13 and an entrance 14 at one end of the body portion. If the body portion is constructed of heat-sealable regenerated cellulose film, there is a heat-seal 15 at the bottom of the body portion. There is also a center seam heat-seal on wall 13 which is not shown in the drawing.

The sealing device is a saddle label 11 which is U-shaped in configuration when extending over the entrance of the body portion or when laid out, as shown in Figure 2, is substantially rectangular in shape. The saddle label is constructed preferably of a felted cellulosic material such as paper or paperboard.

One-half of the inner surface of the saddle label is coated with a pressure sensitive adhesive 16 which is adhered to wall 12 of body portion 10. In Figure 3, a slight gap 17 is shown between the inner surface of the label and wall 12.

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to indicate that this portion of the bag is resealable.

The opposite half of the inner surface is coated with permanent sealing means 18 which can either be a heat-sealable material which is compatible with the body portion of the bag or a permanent adhesive. In Figure 2, a heat-sealable coating is illustrated with area 18 representing the heat-seal bonded to wall 13 and areas 19 and 20 representing portions of the heat-sealable coating not bonded to the wall. Of course, if this half of the inner surface is coated with a permanent adhesive, the entire surface will be bonded to wall 13. The saddle label is foldable along a longitudinal median line 21 to form a bight portion 22.

The pressure sensitive adhesive provides the resealable feature for the bag while the heat-sealable side of the label or the permanent adhesive bonds the label to the bag so that it will not become lost or discarded while the bag is being opened and used.

A modification of the preferred label is to coat one-half of the inner surface with a heat-sealable coating or permanent adhesive but to leave the other half uncoated. To this uncoated portion of the label is attached a small paper medallion coated on one side with a pressure sensitive adhesive. This medallion provides the initial closure and also the resealable feature to the bag.

The heat-sealable coating can be any material compatible with the bag and is preferably a mixture of paraffin wax and a copolymer of ethylene and vinyl acetate. Vinylidene chloride copolymers can also be used with a vinylidene chloride coated regenerated cellulose bag.

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The permanent and pressure sensitive adhesives can be any of those commercially available. Both are generally composed of the same chemical constituents, but the amount of each is varied. The factor which determines whether the adhesive is permanent or pressure sensitive is bond strength. The bond strength is determined by applying a thin layer of the adhesive to a polyethylene coated steel plate and then a one inch wide strip of paper is placed in contact with the adhesive. A permanent type adhesive will give bond strengths of 4 to 5 pounds per inch width, whereas a pressure sensitive adhesive will give bond strengths of approximately 1.5 pounds per inch width.

10 The preferred adhesives both have a butyl rubber base produced by polymerizing isobutylene. To this base is added a filler, a stabilizer, a tackifier and a plasticizer. The permanent type adhesive contains about 50 parts of plasticizer whereas the pressure sensitive adhesive contains about 100-125 parts of plasticizer. Generally, these adhesives are sold under manufacturer code numbers and specific formulas, therefore, are not available.

20 The entrance 14 of the body portion 10 is closed with a heat-seal 23 when the bag of the present invention is initially made, filled and closed. The top seal must be easily opened without tearing the walls of the bag. Obviously, if the bag material tears past the area covered by the saddle label, the products in the bag will be exposed to the air and contaminants and moisture can enter the bag.

30 A straight, continuous standard 1 3/4 inch wide seal is generally difficult to open; therefore, an easily opened top seal should be provided.

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This can be easily accomplished by providing a heat-seal with a scalloped or contoured edge. This allows many areas on the top edge where the seal can be started and, once started, the break will propagate throughout the seal area without damaging the walls of the bag.

Another way for producing the same result is to make the seal substantially thinner than the standard seals normally used. Reducing the seal width from the standard to about 1/8 inch will also allow for easy opening with little or no tearing of the walls of the bag. In either of the above cases, the only alteration that is required of the final closure equipment is that the face of the heat sealing jaws be changed slightly.

A further method for making an easy opening heat seal is to relieve or slope the surface of the sealing jaws so that more pressure is applied to the bottom of the seal. This leaves the top portion lightly sealed, thereby making it easy to start the seal when opening the bag.

While it is possible to seal the top of the bag closed and then seal the saddle label in place in a two step operation, it is preferred that the label be sealed over the top of the bag in the same instant that the top of the bag is sealed.

Example I

A 5" x 8" bag is constructed with heat sealable nitro-cellulose coated cellophane with a standard Simplex bag making machine. The bag has a fold-over seal on the bottom, and a lap seal on the back, leaving the top of the bag open. The label is fabricated from one side printed 50 lb.

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litho type label paper. One-half of the unprinted side is coated with a heat-sealable coating and the other half of the unprinted side is coated with a pressure sensitive adhesive. The coating of the label with adhesives is carried out with a glass draw rod which allows the operator to spread the coating over the film in a uniform thickness. The thickness of the heat-sealable coating is approximately one mil and that of the pressure sensitive coating varies from 1/2 to 1 mil. The heat-sealable coating consists of 10 a mixture of 30 parts of "Elvax" vinyl resin (30% vinyl acetate and 70% ethylene) and 70 parts of paraffin wax. The pressure sensitive coating consists of a butyl rubber based adhesive, soluble in hexane and contains about 30% solids and is available from Pittsburgh Plate Glass as Formula 529.

A food product is inserted into the fabricated cellophane bag and the label is manually folded and placed over top of the bag and the bag sealed with a Vertrod impulse sealer unit in which the temperature of the heat-sealing bar is adjusted to approximately 300° F. The seal is placed 20 approximately 1/2 inch from the top of the bag to allow the walls of the bag to be grasped when opened. The heating bar of the Vertrod impulse sealer unit consists of a narrow nichrome wire which is covered with a TEF-fluorocarbon cloth. The wire is heated by an impulse of electrical current. A sealing unit of this type used in conjunction with cellophane gives a narrow seal which is relatively easy to open.

The bag is opened by peeling open the pressure sensitive portion of the label, separating the heat-seal at the top of the bag, removing part of the product contained 30 within the bag, and resealing the bag by merely replacing the pressure sensitive portion of the label. This operation

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is repeated a number of times. The label retains its adhesive characteristics while firmly and conveniently reclosing the bag.

Example II

A label is made using 50 lb. litho type label paper printed on one side and unprinted on the other. One-half of the unprinted side of the label is coated with a permanent type adhesive and the other half of the label is coated with a pressure sensitive adhesive of the same type used in Example I. Both of the adhesives are from 1/2 to 1 mil in thickness and are applied as in Example I with a glass draw down rod. The permanent type adhesive is a butyl rubber based adhesive soluble in hexane and contains about 30% solids and is available from Pittsburgh Plate Glass as formulation P-431.

This label is manually attached and the bag heat-sealed as in Example I. Upon examination it is found that this unit is easily opened and reclosed as is the bag in Example I.

20

Example III

A label is made using 50 lb. litho type label paper printed on one side and unprinted on the other. One-half of the unprinted side of the label is coated with the heat-sealable coating used in Example I. The other half is left uncoated. This label is manually folded and placed over the top of a cellophane bag filled with a food product similar to the type used in Example I. The label and the top of the bag are heat-sealed together. To provide the reclosable feature a small oval shaped paper medallion, 1 inch in length and 3/4 inch wide, coated on one side with a pressure sensitive

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adhesive is attached to the uncoated half of the label and to the bag. One-half of the medallion is adhered to the label and the other half to the bag. The pressure sensitive adhesive is of the same type used in Example 1. It is found that this unit also is easily opened and reclosed as in the previous examples.

An advantage of this invention is that the bag can easily be opened. The pressure sensitive portion of the label can easily be peeled back and the heat seal at the top 10 of the bag is so designed that the bag walls can easily be separated.

The saddle label is unique in that it is coated on one side with two different coatings. One coating permanently adheres the label to the bag which has the advantage that the label will not be lost once the bag has been opened. The pressure sensitive coated side gives resealability to the container.

Also, the saddle label is not an integral part of the bag but is applied separately. This has the advantage 20 of reducing the cost of the bag in that an intricate flap design is not required. While in this invention the saddle label has been described as being applied and sealed in place manually, the invention is especially advantageous in that commercial semi-automatic label applicators can be used or the entire process can be automated in which the pouch is made, filled and sealed with a resealable label in one continuous operation.